3. (Amended) The method of claim 1 wherein the high performance yarn is comprised of a material selected from the group consisting of extended chain polyethylene, ultra high molecular weight polyethylene, and aramid.

Remarks

Claims 1-21 stand rejected.

The Examiner has rejected Claims 1 and 3 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-7 and 9-14 have been rejected under 35 U.S.C. 102(b) as being anticipated or, in the alternative, under 103(a) as obvious over Yagi et al. (U.S. Patent No. 4,894,281). Claim 8 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. in view of Rossetti (U.S. Patent No. 3,558,423). Claims 15-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. taken in combination with Rerolle et al. (U.S. Patent No. 3,657, 042).

The Examiner requires that the Applicant affirm an election to Group I, Claims 1-21, made verbally by Applicant's counsel on May 1, 2001. Applicant herein elects Group I, Claims 1-21, without traverse. Claims 22-24 are therefore cancelled, without prejudice or any disclaimer of the content thereof.

With respect to the rejection of Claims 1 and 3 under 35 U.S.C. 112, second paragraph, Applicant appreciates the Examiner pointing this out and herein amends Claim 3 for consistency with Claim 1.

Applicant's Invention

Applicant's invention is directed to a method for making a cut and puncture resistant laminated fabric. The laminated fabric comprises a layer of thermoplastic film that is laminated to a layer of fabric formed from high performance yarn, the laminating step being conducted at a temperature of between about *230 degrees Fahrenheit and 290 degrees Fahrenheit* with a

contact time of between about 5 minutes and 15 minutes, and at a laminating pressure of between about 50 and 500 psi.

Applicant's thermoplastic film is selected from high density polyethylene, low density polyethylene, and ethylene vinyl acetate. The high performance fabric is comprised of a material selected from extended chain polyethylene, ultra high molecular weight polyethylene, and aramid.

As described in Applicant's specification, it has been found that "polyethylene and EVA films adhere well to fabrics constructed from high performance polyethylene fibers...given sufficient heat, time, and pressure". (Page 4, Lines 3-5). Sufficient temperature is at least 230 degrees Fahrenheit. Beyond the minimum temperature, time, and pressure required for sufficient lamination, continued heat treatment improves the adhesion of the thermoplastic film to the fabric, diffusing the film into the crystalline structure of the high performance fibers.

Thus, Applicant's invention is concerned with creating a composite fabric and film construction that possesses outstanding durability. Any chemical bonding or alterations in crystalline structure are not important so long as the physical properties (cut and puncture resistance) are achieved in the end product.

The Prior Art is Different

Yagi et al. discloses a fiber-reinforced polymer molded solid body, not a fabric. The polymer molded body as claimed comprises a polymer matrix of thermoplastic resin having a processing temperature *lower than 220 degrees Fahrenheit* and at least one reinforcing layer of molecularly oriented and silane-crosslinked ultra high molecular weight polyethylene fiber. The reinforcing layer is completely embedded in the polymer matrix. This reinforcing layer is not simply ultra high molecular weight polyethylene. It is something entirely different, having a silane-crosslinked makeup that Yagi et al. details at length. A critical limitation of Yagi et al.'s molded body is that the matrix of polymer has a processing temperature lower than 220 degrees Fahrenheit so that the reinforcing layer retains the orientation crystalline structure of the ultra high molecular weight polyethylene fiber. Higher temperatures would adversely alter the crystalline structure, and hence, defeat the inventive aspects of Yagi's molded body, which under

any of the comparative examples described in Yagi et al., does not result in a laminated fabric that is cut and puncture resistant.

Rossetti is directed to an entirely different, and non-relevant, art that results in a low loss electrical printed circuit board comprising polyolefin, fiberglass, and metallic foil. Rossetti's invention first comprises the *irradiation* of sheets of polyethylene with high energy electrons. This step is followed by forming a dielectric board of fiberglass and irradiated polyethylene sheets in an alternating layer arrangement. Temperature and pressure are applied for specified periods. After the irradiated materials are subjected to temperature and pressure, the press is cooled while maintaining the pressure. The resulting composite is a rigid fiberglass-reinforced insulating board suitable for printed circuitry applications.

Rerolle et al. is directed to a process for making laminated sections by winding a sheet of paper or fabric and a plastic film on a mandrel in the cold, without any addition. The wound spool of material is removed and can be heated (at a temperature only around 130 degrees Fahrenheit) at a later time to bond the layers together. Rerolle et al.'s process is directed in large part to eliminating adhesives for attaching layers of material.

Examiner's Rejection of Claims 1-7 and 9-14 Under 35 U.S.C. 102 (b) Should Be Withdrawn Because Yagi et al. Does Not Disclose Each And Every Element of the Claimed Invention

Both the Patent Office and the CAFC (formally the CCPA) have historically required that a single reference teach each and every element of the claim. That requirement is clear and unequivocal. Atlas Powder v. I.E. DuPont, 750 F2d 1569, 224 USPQ 409 (CAFC 1984) James Bury Corp. v. Litton Industrial Products, 750 F.2d 1556, 225 USPQ 253 (CAFC 1985).

As described above, Yagi et al. is completely embedding a reinforcing layer within a polymer matrix of thermoplastic resin. It is very notable that Yagi et al. does not result in any kind of fabric. Therefore, Yagi et al. is not laminating a layer of fabric to a thermoplastic film to obtain a laminated fabric. Yagi et al. specifically requires that the processing temperature of the polymer matrix melt be lower than 220 degrees Fahrenheit so that the crystal structure of the reinforcing layer is not altered. Applicant's claimed invention requires that the laminating pressure be at least 230 degrees Fahrenheit so that the thermoplastic film can diffuse into the

crystalline structure of the high performance fibers. The Examiner cannot simply overlook this limitation. Thus, Yagi et al. lacks, and even teaches against, this key limitation of Applicant's invention. Lacking this element, Yagi et al. cannot form the basis for a proper rejection under 35 U.S.C. 102(b). Alternatively, because Yagi et al. teaches against, rather than teaching for Applicant's claimed invention, Yagi et al. also cannot form the basis for a proper rejection under 35 U.S.C. 103(a).

Claims 8 and 15-21 Are Not Unpatentable Under 35 U.S.C. 103(a) As the Examiner Has Not Made Out a Prima Facie Case of Obviousness

The CAFC (and the CCPA before it) have repeatedly held that, absent a teaching or suggestion in the primary reference for the need, arbitrary modifying of a primary reference or combining of references is improper. The ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577. 221 USPQ 929, 933 (Fed. Cir. 1984). In re Gieger, 815 F. 2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

1. There is no teaching, suggestion, or other motivation in Yagi et al. for modifying Yagi et al. to create Applicant's invention. As to Claim 8, the Examiner has not suggested how Yagi et al. could or should be modified by or combined with Rossetti. Yagi et al. positions a reinforcing layer in a form and completely embeds it in a melt (at a temperature of less than 220 degrees Fahrenheit) of thermoplastic resin. The melted thermoplastic resin is then allowed to solidify. Where the thermoplastic resin in in film or sheet form, it is first *piled* on the reinforcing layer and then pressed at a temperature (below 220 degrees Fahrenheit) to melt the film or sheet, without altering the orientation crystal structure. There is no need in this melting and solidification process to maintain pressure on the polymer matrix while it cools. Where such a crystal structure must be delicately processed, as in Yagi et al., it is possible that maintaining pressure while cooling could induce brittle fracture or structural reorientation throughout the reinforcing layer.

As previously described, Rossetti presses a composite arrangement of alternating layers of reinforcing fiberglass and irradiated polyethylene sheets at a temperature sufficient to bond the layers into an insulating board suitable for printed circuitry applications. After cooling, the

unified structure of the insulating board is substantially different from the polymer matrix construction that Yagi et al. creates. Aside from the application of heat (albeit at substantially different temperatures) to form the respective inventions, there is no similarity between an embedded reinforcing layer and polymer matrix body construction, and a multi-layer fiberglass reinforced insulating board. Once again, there is no motivation in the primary reference for any combination or modification of the primary reference. That the Examiner has found two unrelated references that utilize polyethylene in the inventive products is unacceptable, absent any teaching or other motivation. Therefore, Yagi et al. cannot be modified or combined with Rossetti.

2. There is no teaching, suggestion, or other motivation for combining Yagi et al. with Rerolle et al. (Claims 15-21) First, and quite simply, as earlier argued Yagi et al. cannot be the basis for a rejection under 35 U.S.C. 103. Further, the Examiner has provided not a scintilla of rationale for combining Yagi et al. with Rerolle et al. Rather, the Examiner's bold assertion that "mere substitution" is obvious, is an unsupported conclusion without any basis in the references. This is analogous to the "obvious matter of design choice" which the Board of Patent Appeals and Interferences has held is an "unsupported conclusion—not a reason upon which to base the rejection." In re Garrett, 33 BNA PTCJ 43 (November 13, 1986). Such a rejection has also been flatly rejected by the Federal Circuit where there is no teaching or suggestion in the reference to modify its own structure in the manner of the rejected claim. In re Chu, 66 F.3d 292, 36 USPQ2d 1089 (Fed. Cir. 1995).

There is no suggestion or teaching whatsoever by Yagi et al. for forming the polymer matrix body by first combining materials in a roll and later heating them to form a laminate. Applicant believes this is not even possible, and the Examiner has offered no explanation as to how this could be done, or why one would want to do it. Yagi et al. is formed in flat sheets. While not limited in shape, creating other shapes, e.g., a tube, would require that the reinforcing layer first be arranged in the particular form. Melted thermoplastic resin would then be extruded through a die to embed the fabric. This would be a very complex undertaking. Rerolle et al., in its very simple rolled formation, cannot be used to create Yagi et al.'s polymer body.

With respect to the "mere substitution" of materials, the Examiner once again profers no basis for substituting a molecularly oriented and silane-crosslinked ultra high molecular weight polyethylene file and thermoplastic resin for a commercial sheet material, e.g., paper, and plastic film. Again, the Examiner's rejection is an unsupported conclusion, and not the basis for a proper rejection under 35 U.S.C. 103(a).

Conclusion

Applicant believes this case is now in condition for an immediate allowance with Claims 1-21 and such action is respectfully requested. However, if any issue remains unsolved, applicant's attorney would welcome the opportunity for a telephone interview to expedite allowance.

Respectfully submitted,

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Date: October 4, 2001
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In re Application of: Holland et al.
Serial No.: 08/957,431
Filed: October 24, 1997
Confirmation No.: 2082
For: **LAMINATED FABRIC**

Examiner: J. Gallagher
Art Unit: 1733

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please amend the title of the invention to read as follows: CUT AND PUNCTURE RESISTANT LAMINATED FABRIC.

IN THE CLAIMS:

Please amend the claims to read as follows:

3. (Amended) The method of claim 1 wherein the high performance yarn [fiber] is comprised of a material selected from the group consisting of extended chain polyethylene, ultra high molecular weight polyethylene, and aramid.